

IN THE SPECIFICATION

[0025] Five single nucleotide polymorphisms of GRK4 are also known, namely: R65L (CGT to CTT); A142V (GCC to GTC); V247I (GTA to ATA); A486V (GCG to GTG) and D562G (GAC to GGC). See Premont, *et al.*, *supra*. Applicants have discovered that R61L, A142V and A486V polymorphisms are associated with essential hypertension. Applicants have also discovered additional polymorphisms prevalent in hypertensive individuals, namely: the double mutants R65L, A142V and R65L, A486V; and the triple mutant R65L, A142V, A486V. Table 1 shows the amino acid and corresponding nucleotide sequences of the six GRK4 isoforms. Amino acids and corresponding nucleotides that are changed in the polymorphs associated with essential hypertension are shown in bold. The sequences of the 5' untranslated regions of the epsilon and Zeta isoforms are not shown.

Table 1

MELNIVANS	LLLKARQGGY	GKKSGRSKKW	KEILTLPPVS	QCSELRHSIE	50	GRK4 α
MELNIVANS	LLLKARQ---	-----	-----	-----E		GRK4 β
MELNIVANS	LLLKARQGGY	GKKSGRSKKW	KEILTLPPVS	QCSELRHSIE		GRK4 γ
MELNIVANS	LLLKARQ---	-----	-----	-----E		GRK4 δ
MELNIVANS	LLLKARQGGY	GKKSGRSKKW	KEILTLPPVS	QCSELRHSIE		GRK4 ϵ
MELNIVANS	LLLKARQ---	-----	-----	-----E		GRK4 ζ
KDYSSLCDKQ	PIGRRLFRQF	CDTKPTLKRH	IEFLDAVAEY	EVADEDRSD	100	GRK4 α
KDYSSLCDKQ	PIGRRLFRQF	CDTKPTLKRH	IEFLDAVAEY	EVADEDRSD		GRK4 β
KDYSSLCDKQ	PIGRRLFRQF	CDTKPTLKRH	IEFLDAVAEY	EVADEDRSD		GRK4 γ
KDYSSLCDKQ	PIGRRLFRQF	CDTKPTLKRH	IEFLDAVAEY	EVADEDRSD		GRK4 δ
KDYSSLCDKQ	PIGRRLFRQF	CDTKPTLKRH	IEFLDAVAEY	EVADEDRSD		GRK4 ϵ
KDYSSLCDKQ	PIGRRLFRQF	CDTKPTLKRH	IEFLDAVAEY	EVADEDRSD		GRK4 ζ
CGLSILDRFF	NDKLAAPLPE	IPPDVVTECR	LGLKEENPSK	KAFEECTRVA	150	GRK4 α
CGLSILDRFF	NDKLAAPLPE	IPPDVVTECR	LGLKEENPSK	KAFEECTRVA		GRK4 β
CGLSILDRFF	NDKLAAPLPE	IPPDVVTECR	LGLKEENPSK	KAFEECTRVA		GRK4 γ
CGLSILDRFF	NDKLAAPLPE	IPPDVVTECR	LGLKEENPSK	KAFEECTRVA		GRK4 δ
CGLSILDRFF	NDKLAAPLPE	IPPDVVTECR	LGLKEENPSK	KAFEECTRVA		GRK4 ϵ
CGLSILDRFF	NDKLAAPLPE	IPPDVVTECR	LGLKEENPSK	KAFEECTRVA		GRK4 ζ

HNYLRGEPFE	EYQESSYFSQ	FLQWKWLERQ	PVTKNTRFRHY	RVLGKGGFGE	200	GRK4 α
HNYLRGEPFE	EYQESSYFSQ	FLQWKWLERQ	PVTKNTRFRHY	RVLGKGGFGE		GRK4 β
HNYLRGEPFE	EYQESSYFSQ	FLQWKWLERQ	PVTKNTRFRHY	RVLGKGGFGE		GRK4 γ
HNYLRGEPFE	EYQESSYFSQ	FLQWKWLERQ	PVTKNTRFRHY	RVLGKGGFGE		GRK4 δ
HNYLRGEPFE	EYQESSYFSQ	FLQWKWLERQ	PVTKNTRFRHY	RVLGKGGFGE		GRK4 ϵ
HNYLRGEPFE	EYQESSYFSQ	FLQWKWLERQ	PVTKNTRFRHY	RVLGKGGFGE		GRK4 ζ
VCACQVRATG	KMYACKKLQ	KRIKKRKGEA	MALNEKRILE	KVQSRFVVSL	250	GRK4 α
VCACQVRATG	KMYACKKLQ	KRIKKRKGEA	MALNEKRILE	KVQSRFVVSL		GRK4 β
VCACQVRATG	KMYACKKLQ	KRIKKRKGEA	MALNEKRILE	KVQSRFVVSL		GRK4 γ
VCACQVRATG	KMYACKKLQ	KRIKKRKGEA	MALNEKRILE	KVQSRFVVSL		GRK4 δ
VCACQVRATG	KMYACKKLQ	KRIKKRKGEA	MALNEKRILE	KVQSRFVVSL		GRK4 ϵ
VCACQVRATG	K					
VCACQVRATG	KMYACKKLQ	KRIKKRKGEA	MALNEKRILE	KVQSRFVVSL		GRK4 ζ
AYAYETKDAL	CLVLTIMNGG	DLKFHIYNLG	NPGFDEQRAV	FYAAELCCGL	300	GRK4 α
AYAYETKDAL	CLVLTIMNGG	DLKFHIYNLG	NPGFDEQRAV	FYAAELCCGL		GRK4 β
AYAYETKDAL	CLVLTIMNGG	DLKFHIYNLG	NPGFDEQRAV	FYAAELCCGL		GRK4 γ
AYAYETKDAL	CLVLTIMNGG	DLKFHIYNLG	NPGFDEQRAV	FYAAELCCGL		GRK4 δ
AYAYETKDAL	CLVLTIMNGG	DLKFHIYNLG	NPGFDEQRAV	FYAAELCCGL		GRK4 ϵ
AYAYETKDAL	CLVLTIMNGG	DLKFHIYNLG	NPGFDEQRAV	FYAAELCCGL		GRK4 ζ
EDLQRERIVY	RDLKPENILL	DDRGHIRISD	LGLATEIPEG	QVRGRVGTG	350	GRK4 α
EDLQRERIVY	RDLKPENILL	DDRGHIRISD	LGLATEIPEG	QVRGRVGTG		GRK4 β
EDLQRERIVY	RDLKPENILL	DDRGHIRISD	LGLATEIPEG	QVRGRVGTG		GRK4 γ
EDLQRERIVY	RDLKPENILL	DDRGHIRISD	LGLATEIPEG	QVRGRVGTG		GRK4 δ
EDLQRERIVY	RDLKPENILL	DDRGHIRISD	LGLATEIPEG	QVRGRVGTG		GRK4 ϵ
EDLQRERIVY	RDLKPENILL	DDRGHIRISD	LGLATEIPEG	QVRGRVGTG		GRK4 ζ
GYMAPEVVNN	EKYTFSPDWW	GLGCLYEMI	QGHSPFKKYK	EKVKWEEVD	400	GRK4 α
GYMAPEVVNN	EKYTFSPDWW	GLGCLYEMI	QGHSPFKKYK	Q		
GYMAPEVVNN	EKYTFSPDWW	GLGCLYEMI	QGHSPFKKYK	EKVKWEEVD		GRK4 β
GYMAPEVVNN	EKYTFSPDWW	GLGCLYEMI	QGHSPFKKYK	Q		
GYMAPEVVNN	EKYTFSPDWW	GLGCLYEMI	QGHSPFKKYK	EKVKWEEVD		GRK4 γ
GYMAPEVVNN	EKYTFSPDWW	GLGCLYEMI	QGHSPFKKYK	Q		
GYMAPEVVNN	EKYTFSPDWW	GLGCLYEMI	QGHSPFKKYK	EKVKWEEVD		GRK4 δ
GYMAPEVVNN	EKYTFSPDWW	GLGCLYEMI	QGHSPFKKYK	Q		
GYMAPEVVNN	EKYTFSPDWW	GLGCLYEMI	QGHSPFKKYK	EKVKWEEVD		GRK4 ϵ
GYMAPEVVNN	EKYTFSPDWW	GLGCLYEMI	QGHSPFKKYK	Q		
GYMAPEVVNN	EKYTFSPDWW	GLGCLYEMI	QGHSPFKKYK	EKVKWEEVD		GRK4 ζ

Q

RIKNDTEEYS	EKFSEDAKSI	CRMLLTKNPS	KRLGCRGEGA	AGVKQHPVFK	450	GRK4 α
RIKNDTEEYS	EKFSEDAKSI	CRMLLTKNPS	KRLGCRGEGA	AGVKQHPVFK		GRK4 β
RIKNDTEEYS	EKFSEDAKSI	CRMLLTKNPS	KRLGCRGEGA	AGVKQHPVFK		GRK4 γ
RIKNDTEEYS	EKFSEDAKSI	CRMLLTKNPS	KRLGCRGEGA	AGVKQHPVFK		GRK4 δ
RIKNDTEEYS	EKFSEDAKSI	CRM-----	-----	-----		GRK4 ϵ
RIKNDTEEYS	EKFSEDAKSI	CRM-----	-----	-----		GRK4 ζ

DINFRRLEAN	MLEPPFCPDP	HAVYCKDVLD	IEQFSAVKGI	YLDTADEDFY	500	GRK4 α
DINFRRLEAN	MLEPPFCPDP	HAVYCKDVLD	IEQFSAVKGI	YLDTADEDFY		GRK4 β
DINFRRLEAN	MLEPPFCPDP	HAVYCKDVLD	IEQFSAVKGI	YLDTADEDFY		GRK4 γ
DINFRRLEAN	MLEPPFCPDP	HAVYCKDVLD	IEQFSAVKGI	YLDTADEDFY		GRK4 δ
-----	-----P	HAVYCKDVLD	IEQFSAVKGI	YLDTADEDFY		GRK4 ϵ
-----	-----P	HAVYCKDVLD	IEQFSAVKGI	YLDTADEDFY		GRK4 ζ

ARFATGCVSI	PWQNEMIESG	CFKDINKSES	EEALPLDLDK	NIHTPVSRPN	550	GRK4 α
ARFATGCVSI	PWQNEMIESG	CFKDINKSES	EEALPLDLDK	NIHTPVSRPN		GRK4 β
ARFATGCVSI	PWQNE-----	-----	-----	-----		GRK4 γ
ARFATGCVSI	PWQNE-----	-----	-----	-----		GRK4 δ
ARFATGCVSI	PWQNE-----	-----	-----	-----		GRK4 ϵ
ARFATGCVSI	PWQNE-----	-----	-----	-----		GRK4 ζ

RGFFYRLFRR	GGCLTMVPSE	KEVEPKQC	578	GRK4 α	(SEQ ID NO:1)
RGFFYRLFRR	GGCLTMVPSE	KEVEPKQC	556 <u>546</u>	GRK4 β	(SEQ ID NO:2)
-----	-GCLTMVPSE	KEVEPKQC	532	GRK4 γ	(SEQ ID NO:3)
-----	-GCLTMVPSE	KEVEPKQC	540 <u>500</u>	GRK4 δ	(SEQ ID NO:4)
-----	-GCLTMVPSE	KEVEPKQC	466 <u>486</u>	GRK4 ϵ	(SEQ ID NO:5)
-----	-GCLTMVPSE	KEVEPKQC	434 <u>454</u>	GRK4 ζ	(SEQ ID NO:6)

Note: The bolded letters indicate the change in amino acid associated with hypertension R to L (arginine to leucine), A to V (alanine to valine), and A to V (alanine to valine).

Nucleotide sequence:

1	gcagccgccc	cggtcgggct	gccccctccc	ctgccccga	ccgctcccct	gctggtgagg	GRK4 α
	gcagccgccc	cggtcgggct	gccccctccc	ctgccccga	ccgctcccct	gctggtgagg	GRK4 β
	gcagccgccc	cggtcgggct	gccccctccc	ctgccccga	ccgctcccct	gctggtgagg	GRK4 γ
	gcagccgccc	cggtcgggct	gccccctccc	ctgccccga	ccgctcccct	gctggtgagg	GRK4 δ
61	gcctgcgcag	gcggcggcgg	cggcgcctt	ggtggcagt	gtggcggcgg	agcagcctcc	GRK4 α
	gcctgcgcag	gcggcggcgg	cggcgcctt	ggtggcagt	gtggcggcgg	agcagcctcc	GRK4 β
	gcctgcgcag	gcggcggcgg	cggcgcctt	ggtggcagt	gtggcggcgg	agcagcctcc	GRK4 γ

gcctgcgcag gcggcggcgg cgggccctt ggtggcagtg gtggcggcgg agcagcctcc GRK4δ

121 cgggatcgtg tctggagctc gaggagaggg tagtgcccgg cgagctatgc acgggggcgg GRK4α
 cgggatcgtg tctggagctc gaggagaggg tagtgcccgg cgagctatgc acgggggcgg GRK4β
 cgggatcgtg tctggagctc gaggagaggg tagtgcccgg cgagctatgc acgggggcgg GRK4γ
 cgggatcgtg tctggagctc gaggagaggg tagtgcccgg cgagctatgc acgggggcgg GRK4δ

181 cggcgctccc tctgttccg cctcctcagt ctctcggtc tcgcagaatc cgccggcggc GRK4α
 cggcgctccc tctgttccg cctcctcagt ctctcggtc tcgcagaatc cgccggcggc GRK4β
 cggcgctccc tctgttccg cctcctcagt ctctcggtc tcgcagaatc cgccggcggc GRK4γ
 cggcgctccc tctgttccg cctcctcagt ctctcggtc tcgcagaatc cgccggcggc GRK4δ

exon 1

241 ggccggcgcca ggacatggag ctcgagaaca tcgtggccaa ctgctgctg ctgaaagcgc GRK4α
 ggccggcgcca ggacatggag ctcgagaaca tcgtggccaa ctgctgctg ctgaaagcgc GRK4β
 ggccggcgcca ggacatggag ctcgagaaca tcgtggccaa ctgctgctg ctgaaagcgc GRK4γ
 ggccggcgcca ggacatggag ctcgagaaca tcgtggccaa ctgctgctg ctgaaagcgc GRK4δ

atggag ctcgagaaca tcgtggccaa ctgctgctg ctgaaagcgc GRK4ε

atggag ctcgagaaca tcgtggccaa ctgctgctg ctgaaagcgc GRK4ζ

exon 2

301 gtcaaggagg atatggcaaa aaaagtggc gtagtaaaaa atggaaggag atactgacac GRK4α
 gtcaa----- GRK4β
 gtcaaggagg atatggcaaa aaaagtggc gtagtaaaaa atggaaggag atactgacac GRK4γ
 gtcaa----- GRK4δ
 gtcaaggagg atatggcaaa aaaagtggc gtagtaaaaa atggaaggag atactgacac GRK4ε
 gtcaa----- GRK4ζ

exon 3

361 tgctctctgt cagccagtc agtgagctta gacattccat tgaaaaggat tatagcagtc GRK4α
 ----- -gaaaaggat tatagcagtc GRK4β
 tgctctctgt cagccagtc agtgagctta gacattccat tgaaaaggat tatagcagtc GRK4γ
 ----- -gaaaaggat tatagcagtc GRK4δ
 tgctctctgt cagccagtc agtgagctta gacattccat tgaaaaggat tatagcagtc GRK4ε
 ----- -gaaaaggat tatagcagtc GRK4ζ

421 tttgtgacaa gcaaccgata ggaagacgtc tcttcaggca gttctgtgat accaaaccca GRK4α
 ttgtgacaa gcaaccgata ggaagacgtc tcttcaggca gttctgtgat accaaaccca GRK4β
 ttgtgacaa gcaaccgata ggaagacgtc tcttcaggca gttctgtgat accaaaccca GRK4γ
 ttgtgacaa gcaaccgata ggaagacgtc tcttcaggca gttctgtgat accaaaccca GRK4δ
 ttgtgacaa gcaaccgata ggaagacgtc tcttcaggca gttctgtgat accaaaccca GRK4ε

ttgtgacaa gcaaccgata ggaagacgtc tcttcaggca gtctgtgat accaaaccca GRK4ζ
exon 4

481 ctctaaagag gcacattgaa ttctggatg cagtggcaga atatgaagt gccgatgatg GRK4α
ctctaaagag gcacattgaa ttctggatg cagtggcaga atatgaagt gccgatgatg GRK4β
ctctaaagag gcacattgaa ttctggatg cagtggcaga atatgaagt gccgatgatg GRK4γ
ctctaaagag gcacattgaa ttctggatg cagtggcaga atatgaagt gccgatgatg GRK4δ
ctctaaagag gcacattgaa ttctggatg cagtggcaga atatgaagt gccgatgatg GRK4ε
ctctaaagag gcacattgaa ttctggatg cagtggcaga atatgaagt gccgatgatg GRK4ζ
exon 5

541 aggaccgaag tgattgtgga ctgtcaatct tagatagatt ctccaatgat aagtggcag GRK4α
aggaccgaag tgattgtgga ctgtcaatct tagatagatt ctccaatgat aagtggcag GRK4β
aggaccgaag tgattgtgga ctgtcaatct tagatagatt ctccaatgat aagtggcag GRK4γ
aggaccgaag tgattgtgga ctgtcaatct tagatagatt ctccaatgat aagtggcag GRK4δ
aggaccgaag tgattgtgga ctgtcaatct tagatagatt ctccaatgat aagtggcag GRK4ε
aggaccgaag tgattgtgga ctgtcaatct tagatagatt ctccaatgat aagtggcag GRK4ζ

601 ccccttacc agaaatacct ccagatgtg tgacagaatg tagattggga ctgaaggagg GRK4α
ccccttacc agaaatacct ccagatgtg tgacagaatg tagattggga ctgaaggagg GRK4β
ccccttacc agaaatacct ccagatgtg tgacagaatg tagattggga ctgaaggagg GRK4γ
ccccttacc agaaatacct ccagatgtg tgacagaatg tagattggga ctgaaggagg GRK4δ
ccccttacc agaaatacct ccagatgtg tgacagaatg tagattggga ctgaaggagg GRK4ε
ccccttacc agaaatacct ccagatgtg tgacagaatg tagattggga ctgaaggagg GRK4ζ
exon 6

661 agaacccttc caaaaaagcc ttgaggaat gtactag agt tgcccataac tacctaagag GRK4α
agaacccttc caaaaaagcc ttgaggaat gtactagagt tgcccataac tacctaagag GRK4β
agaacccttc caaaaaagcc ttgaggaat gtactagagt tgcccataac tacctaagag GRK4γ
agaacccttc caaaaaagcc ttgaggaat gtactagagt tgcccataac tacctaagag GRK4δ
agaacccttc caaaaaagcc ttgaggaat gtactagagt tgcccataac tacctaagag GRK4ε
agaacccttc caaaaaagcc ttgaggaat gtactagagt tgcccataac tacctaagag GRK4ζ

721 gggaaccatt tgaagaatac caagaaagct catattttc tcagtttta caatggaaat GRK4α
gggaaccatt tgaagaatac caagaaagct catattttc tcagtttta caatggaaat GRK4β
gggaaccatt tgaagaatac caagaaagct catattttc tcagtttta caatggaaat GRK4γ
gggaaccatt tgaagaatac caagaaagct catattttc tcagtttta caatggaaat GRK4δ
gggaaccatt tgaagaatac caagaaagct catattttc tcagtttta caatggaaat GRK4ε
gggaaccatt tgaagaatac caagaaagct catattttc tcagtttta caatggaaat GRK4ζ
exon 7

- 781 ggctggaaag gcaacccgta acaaagaaca catttagaca ttacagagtt ctaggaaaag GRK4 α
 ggctggaaag gcaacccgta acaaagaaca catttagaca ttacagagtt ctaggaaaag GRK4 β
 ggctggaaag gcaacccgta acaaagaaca catttagaca ttacagagtt ctaggaaaag GRK4 γ
 ggctggaaag gcaacccgta acaaagaaca catttagaca ttacagagtt ctaggaaaag GRK4 δ
 ggctggaaag gcaacccgta acaaagaaca catttagaca ttacagagtt ctaggaaaag GRK4 ϵ
 ggctggaaag gcaacccgta acaaagaaca catttagaca ttacagagtt ctaggaaaag GRK4 ζ
 exon 8
- 841 gcggtattgg agaggtttgc gcctgtcaag tgcgagccac aggaaaaatg tatgcctgca GRK4 α
 gcggtattgg agaggtttgc gcctgtcaag tgcgagccac aggaaaaatg tatgcctgca GRK4 β
 gcggtattgg agaggtttgc gcctgtcaag tgcgagccac aggaaaaatg tatgcctgca GRK4 γ
 gcggtattgg agaggtttgc gcctgtcaag tgcgagccac aggaaaaatg tatgcctgca GRK4 δ
 gcggtattgg agaggtttgc gcctgtcaag tgcgagccac aggaaaaatg tatgcctgca GRK4 ϵ
 gcggtattgg agaggtttgc gcctgtcaag tgcgagccac aggaaaaatg tatgcctgca GRK4 ζ
- 901 aaaagctaca aaaaaaaga ataaagaaga ggaaaggta agctatggct cttaatgaga GRK4 α
 aaaagctaca aaaaaaaga ataaagaaga ggaaaggta agctatggct cttaatgaga GRK4 β
 aaaagctaca aaaaaaaga ataaagaaga ggaaaggta agctatggct cttaatgaga GRK4 γ
 aaaagctaca aaaaaaaga ataaagaaga ggaaaggta agctatggct cttaatgaga GRK4 δ
 aaaagctaca aaaaaaaga ataaagaaga ggaaaggta agctatggct cttaatgaga GRK4 ϵ
 aaaagctaca aaaaaaaga ataaagaaga ggaaaggta agctatggct cttaatgaga GRK4 ζ
 exon 9
- 961 aaagaattct ggagaaagt gaaagtagat tcgtagttag tttagcctac gcttatgaaa GRK4 α
 aaagaattct ggagaaagt gaaagtagat tcgtagttag tttagcctac gcttatgaaa GRK4 β
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 aaagaattct ggagaaagt gaaagtagat tcgtagttag tttagcctac gcttatgaaa GRK4 δ
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 aaagaattct ggagaaagt gaaagtagat tcgtagttag tttagcctac gcttatgaaa GRK4 ζ
- 1021 ccaaagatgc ctgtgcttg gtgctcacca ttatgaatgg aggggatttg aagtttcaca GRK4 α
 ccaaagatgc ctgtgcttg gtgctcacca ttatgaatgg aggggatttg aagtttcaca GRK4 β
 ccaaagatgc ctgtgcttg gtgctcacca ttatgaatgg aggggatttg aagtttcaca GRK4 γ
 ccaaagatgc ctgtgcttg gtgctcacca ttatgaatgg aggggatttg aagtttcaca GRK4 δ
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- 1081 tttacaacct gggcaatccc ggctttgatg agcagagagc cgttttctat gctgcagagc GRK4 α
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tttacaacct gggcaatccc ggctttagtg agcagagagc cgttttctat gctgcagagc GRK4ε
 tttacaacct gggcaatccc ggctttagtg agcagagagc cgttttctat gctgcagagc GRK4ζ
 exon 10

1141 tggtgtgcgg ctggaagat ttacagaggg aaagaattgt atacagagac ttgaagcctg GRK4α
 tggtgtgcgg ctggaagat ttacagaggg aaagaattgt atacagagac ttgaagcctg GRK4β
 tggtgtgcgg ctggaagat ttacagaggg aaagaattgt atacagagac ttgaagcctg GRK4γ
 tggtgtgcgg ctggaagat ttacagaggg aaagaattgt atacagagac ttgaagcctg GRK4δ
 tggtgtgcgg ctggaagat ttacagaggg aaagaattgt atacagagac ttgaagcctg GRK4ε
 tggtgtgcgg ctggaagat ttacagaggg aaagaattgt atacagagac ttgaagcctg GRK4ζ
 exon 11

1201 agaatattct ccttgatgat cgtggacaca tccggatttc agacctcggg ttggccacag GRK4α
 agaatattct ccttgatgat cgtggacaca tccggatttc agacctcggg ttggccacag GRK4β
 agaatattct ccttgatgat cgtggacaca tccggatttc agacctcggg ttggccacag GRK4γ
 agaatattct ccttgatgat cgtggacaca tccggatttc agacctcggg ttggccacag GRK4δ
 agaatattct ccttgatgat cgtggacaca tccggatttc agacctcggg ttggccacag GRK4ε
 agaatattct ccttgatgat cgtggacaca tccggatttc agacctcggg ttggccacag GRK4ζ
 exon 12

1261 agatcccaga aggacagagg gttcgaggaa gagttggaac agtcggctac atggcacctg GRK4α
 agatcccaga aggacagagg gttcgaggaa gagttggaac agtcggctac atggcacctg GRK4β
 agatcccaga aggacagagg gttcgaggaa gagttggaac agtcggctac atggcacctg GRK4γ
 agatcccaga aggacagagg gttcgaggaa gagttggaac agtcggctac atggcacctg GRK4δ
 agatcccaga aggacagagg gttcgaggaa gagttggaac agtcggctac atggcacctg GRK4ε
 agatcccaga aggacagagg gttcgaggaa gagttggaac agtcggctac atggcacctg GRK4ζ

1321 aagttgtcaa taatgaaaag tatacgttta gtcccgattg gtggggactt ggctgtctga GRK4α
 aagttgtcaa taatgaaaag tatacgttta gtcccgattg gtggggactt ggctgtctga GRK4β
 aagttgtcaa taatgaaaag tatacgttta gtcccgattg gtggggactt ggctgtctga GRK4γ
 aagttgtcaa taatgaaaag tatacgttta gtcccgattg gtggggactt ggctgtctga GRK4δ
 aagttgtcaa taatgaaaag tatacgttta gtcccgattg gtggggactt ggctgtctga GRK4ε
 aagttgtcaa taatgaaaag tatacgttta gtcccgattg gtggggactt ggctgtctga GRK4ζ

1381 tctatgaaat gattcagggg cattctccat tcaaaaaata caaagagaaa gtcaaatggg GRK4α
 tctatgaaat gattcagggg cattctccat tcaaaaaata caaagagaaa gtcaaatggg GRK4β
 tctatgaaat gattcagggg cattctccat tcaaaaaata caaagagaaa gtcaaatggg GRK4γ
 tctatgaaat gattcagggg cattctccat tcaaaaaata caaagagaaa gtcaaatggg GRK4δ
 tctatgaaat gattcagggg cattctccat tcaaaaaata caaagagaaa gtcaaatggg GRK4ε
 tctatgaaat gattcagggg cattctccat tcaaaaaata caaagagaaa gtcaaatggg GRK4ζ

1441 aggaggtcga tcaaagaatc aagaatgata ccgaggagta ttctgagaag tttcagagg GRK4 α
 aggaggtcga tcaaagaatc aagaatgata ccgaggagta ttctgagaag tttcagagg GRK4 β
 aggaggtcga tcaaagaatc aagaatgata ccgaggagta ttctgagaag tttcagagg GRK4 γ
 aggaggtcga tcaaagaatc aagaatgata ccgaggagta ttctgagaag tttcagagg GRK4 δ
 aggaggtcga tcaaagaatc aagaatgata ccgaggagta ttctgagaag tttcagagg GRK4 ϵ
 aggaggtcga tcaaagaatc aagaatgata ccgaggagta ttctgagaag tttcagagg GRK4 ζ
 exon 13

1501 atgccaaatc tatctgcagg atgttactca ccaagaatcc aagcaagcgg ctgggctgca GRK4 α
 atgccaaatc tatctgcagg atgttactca ccaagaatcc aagcaagcgg ctgggctgca GRK4 β
 atgccaaatc tatctgcagg atgttactca ccaagaatcc aagcaagcgg ctgggctgca GRK4 γ
 atgccaaatc tatctgcagg atgttactca ccaagaatcc aagcaagcgg ctgggctgca GRK4 δ
 atgccaaatc tatctgcagg atg----- GRK4 ϵ
 atgccaaatc tatctgcagg atg----- GRK4 ζ

1561 ggggcgaggg agcggctggg gtgaagcagc acccgtgtt caaggacatc aacttcagga GRK4 α
 gggcgaggg agcggctggg gtgaagcagc acccgtgtt caaggacatc aacttcagga GRK4 β
 gggcgaggg agcggctggg gtgaagcagc acccgtgtt caaggacatc aacttcagga GRK4 γ
 gggcgaggg agcggctggg gtgaagcagc acccgtgtt caaggacatc aacttcagga GRK4 δ
 ----- GRK4 ϵ
 ----- GRK4 ζ
 exon 14

1621 ggctggaggc aaacatgctg gagccccctt tctgtcctga tcctcatgcc gtttactgta GRK4 α
 ggctggaggc aaacatgctg gagccccctt tctgtcctga tcctcatgcc gtttactgta GRK4 β
 ggctggaggc aaacatgctg gagccccctt tctgtcctga tcctcatgcc gtttactgta GRK4 γ
 ggctggaggc aaacatgctg gagccccctt tctgtcctga tcctcatgcc gtttactgta GRK4 δ
 ----- -cctcatgcc gtttactgta GRK4 ϵ
 ----- -cctcatgcc gtttactgta GRK4 ζ

1681 aggacgtcct ggatatcgag cagttctcgg cggtgaaagg gatctacctg gacaccgcag GRK4 α
 aggacgtcct ggatatcgag cagttctcgg cggtgaaagg gatctacctg gacaccgcag GRK4 β
 aggacgtcct ggatatcgag cagttctcgg cggtgaaagg gatctacctg gacaccgcag GRK4 γ
 aggacgtcct ggatatcgag cagttctcgg cggtgaaagg gatctacctg gacaccgcag GRK4 δ
 ----- -cctcatgcc gtttactgta GRK4 ϵ
 ----- -cctcatgcc gtttactgta GRK4 ζ

exon 15

1741 atgaagactt ctatgctcgg ttgctaccg ggtgtgtctc catcccctgg cagaatgaga GRK4 α
 atgaagactt ctatgctcgg ttgctaccg ggtgtgtctc catcccctgg cagaatgaga GRK4 β
 atgaagactt ctatgctcgg ttgctaccg ggtgtgtctc catcccctgg cagaatga-- GRK4 γ

atgaagactt ctatgctcgg ttgctaccg ggtgtgtctc catcccctgg cagaatga_ - GRK4δ
 atgaagactt ctatgctcgg ttgctaccg ggtgtgtctc catcccctgg cagaatga-- GRK4ε
 atgaagactt ctatgctcgg ttgctaccg ggtgtgtctc catcccctgg cagaatga-- GRK4ζ
 1801 tgatcgaatc cgggtgtttc aaagacatca acaaaagtga aagtgaggaa gctttgccat GRK4α
 tgatcgaatc cgggtgtttc aaagacatca acaaaagtga aagtgaggaa gctttgccat GRK4β
 ----- GRK4γ
 ----- GRK4δ
 ----- GRK4ε
 ----- GRK4ζ

 1861 tagatctaga caagaacata cataccccgg ttccagacc aaacagaggc ttctctata GRK4α
 tagatctaga caagaacata cataccccgg ttccagacc aaacagaggc ttctctata GRK4β
 ----- GRK4γ
 ----- GRK4δ
 ----- GRK4ε
 ----- GRK4ζ

 exon 16

 1921 gactctcag aagagggggc tgcctgacca tggccccag tgagaaggaa gtggaaccca GRK4α
 gactctcag aagagggggc tgcctgacca tggccccag tgagaaggaa gtggaaccca GRK4β
 -----gggc tgcctgacca tggccccag tgagaaggaa gtggaaccca GRK4γ
 -----gggc tgcctgacca tggccccag tgagaaggaa gtggaaccca GRK4δ
 -----gggc tgcctgacca tggccccag tgagaaggaa gtggaaccca GRK4ε
 -----gggc tgcctgacca tggccccag tgagaaggaa gtggaaccca GRK4ζ

 1981 agcaatgctg agcaccgccg tgcggaccac agagcagacc ctggcgccag gaaggagcat GRK4α
 agcaatgctg agcaccgccg tgcggaccac agagcagacc ctggcgccag gaaggagcat GRK4β
 agcaatgctg agcaccgccg tgcggaccac agagcagacc ctggcgccag gaaggagcat GRK4γ
 agcaatgctg agcaccgccg tgcggaccac agagcagacc ctggcgccag gaaggagcat GRK4δ
 agcaatgctg a GRK4ε
 agcaatgctg a GRK4ζ

 2041 gtgttagcgt ctctgccac ctggaattgt aataaataca tctaaataaa acatgccttg GRK4α
 gtgttagcgt ctctgccac ctggaattgt aataaataca tctaaataaa acatgccttg GRK4β
 gtgttagcgt ctctgccac ctggaattgt aataaataca tctaaataaa acatgccttg GRK4γ
 gtgttagcgt ctctgccac ctggaattgt aataaataca tctaaataaa acatgccttg GRK4δ
 GRK4ε
 GRK4ζ

 2101 ggagtgatca gac GRK4α (1857 bp, 16 exons) (SEQ ID NO:7)
 ggagtgatca gac GRK4β (1761 bp, 15 exons, no exon 2) (SEQ ID NO:8)

ggagtgatca gac

GRK4 γ (δ (1719 bp, 15 exons, no exon 15)(SEQ ID NO:9)

ggagtgatca gac

GRK4 δ (1623 bp, 14 exons, no exon 2 & 15)(SEQ ID NO:10)GRK4 ϵ (1581 bp, 14 exons, no exon 13 & 15)(SEQ ID NO:11)GRK4 ζ (1487 bp, 13 exons, no exon 2, 13, & 15)(SEQ ID NO:12)**Note:**

The bolded atg represents the start of translation.

The bolded and shaded nucleotides represent the polymorphic sites associated with hypertension g to t (exon 3), c to t (exon 5), and c to t (exon 14)

The exons are depicted by an underline and a double underline.

The nucleotides at 1989 to 1981 represent as stop codon.